

### All about automotive engineering in a pocket book

For years, the **Bosch Automotive Handbook** has set the standard for practical, concise and illuminating explanations of the design and operation of automotive systems. This indispensable reference book has now been almost completely revised for the 6th edition.

New and updated topics in the 6th edition include aerodynamics, emissions reduction systems and multimedia systems. Additionally, over fifty subjects from the previous edition have been either completely updated, revised or extended. This new edition adds over 270 new pages to the previous 5th edition.

Do you want to know how electronic fuel injection works? The **Automotive Handbook** will tell you. How to calculate the factors affecting tire adhesion and braking distance? The different testing methods for material hardness? Again, the **Automotive Handbook** will tell you. With more than one thousand cut-away illustrations, diagrams, tables and sectional drawings, the **Automotive Handbook** makes even sophisticated automotive concepts easy to visualize and understand.

The **Bosch Automotive Handbook**, a reliable guide full of up-to-date and concise information, has grown over a period of six decades from a calendar supplement of 96 pages to a 1232 page reference work. In that time, over a million copies have been produced worldwide and the text has been translated into numerous languages.

In the realms of technical literature, the **Bosch Automotive Handbook** has long since established itself as a source of precise information on the subject of automotive technology.

#### New topics in the 6th edition include:

- Hydrostatics
- Aerodynamics
- Mechatronics
- Coating systems
- Friction-engagement connections
- Positive-engagement connections
- Engine lubrication
- Emissions reduction systems
- Diagnostics
- Commercial-vehicle braking management as the platform for commercial-vehicle driver assistance systems
- Analog and digital signal transmission
- Mobile information services
- Fleet management
- Multimedia systems
- Development methods and application-engineering tools for electronic systems
- Sound design
- Vehicle wind tunnels
- Environmental management
- Workshops technology

## Bosch Automotive Handbook

### Updated 6th Edition

by Robert Bosch GmbH

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1232 pages, over 1000 b/w photos and illustrations

#### 644 Engine management for spark-ignition (SI) engines

##### K-Jetronic

The K-Jetronic system operates without a carburetor and injects fuel continuously. The injected mass is not determined by the fuel distributor, but is preset by the fuel distributor.

##### Operating concept

- Continuous fuel injection  
- Direct fuel injection

K-Jetronic is a mechanical system which does not require an engine-driven fuel-pump. It features a continuous supply of fuel to the intake manifold via a pump in the engine intake duct.

Overall direct fuel measurement.

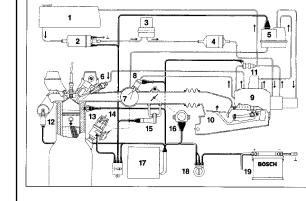
K-Jetronic takes into account changes caused by the engine, and per-

mits the use of emission-control equipment, for which precise intake-air monitoring is an essential requirement.

##### Operating concept

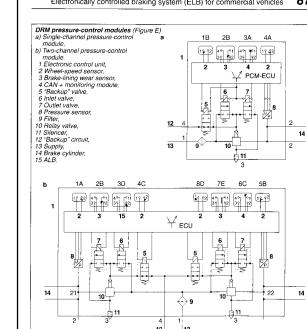
The fuel is delivered from the fuel tank by a pump to the fuel accumulator, where it flows through the fuel accumulator and fuel line to the fuel distributor. A pressure sensor in the fuel line before the fuel distributor maintains the fuel at a constant pressure. The fuel then passes through the fuel distributor to the injectors. Excess fuel not required by the engine is returned to the fuel tank.

Schematic of a K-Jetronic system:  
1 Fuel tank; 2 Pump; 3 Fuel filter; 4 Fuel filter; 5 Warm-up regulator; 6 Injector; 7 Intake manifold; 8 Electric cold-start valve; 9 Fuel distributor; 10 Air-flow sensor; 11 Pulse valve; 12 Throttle valve; 13 Throttle-valve switch; 14 Throttle-valve switch; 15 Auxiliary-air valve; 16 Throttle-valve switch; 17 ECU; 18 Ignition switch; 19 Battery



Engine management for spark-ignition (SI) engines — K-Jetronic  
Sample page from **Bosch Automotive Handbook**

#### Electrically controlled braking system (ELB) for commercial vehicles 871



Pressure-control modules (PCM, Figure E)  
The pressure-control module form the integrated system the electric braking system and the pneumatic braking force. The pressure-control module receives pressure transmitted via the brake lines. The pressure CAN to pressure conversion is carried out by a pressure sensor. Conversion can be effected solenoid combination. A pressure sensor is used to measure the pressure delivered. Thus, braking pressure can be controlled in a closed control loop. The electronically activated "lock-off" solenoid shifts off the pneumatic control circuits of the FBM in order to permit interference-free electrical pressure control.

Mounting the pressure-control modules close to the wheels means that the electronic components are protected against wheel speed sensors and the brake-lining wear sensors can be kept short. This significantly reduces the response times of the pressure control modules and the vehicle's CAN. This minimizes the amount of weight required on the vehicle subsequently.

Electrically controlled braking system (ELB) for commercial vehicles — Pressure-control modules  
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